



EMC TEST REPORT

For

MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD

LiFePO4 Battery Pack

Test Model: LP19-48100

Serial models: (Refer to page 7)

Prepared for : MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD
Address : 1-5F, 7F, 9F, 10F of No. 8 Building, No. 115, Zhangcha Road 1,
Chancheng District, Foshan City, Guangdong Province, P.R.China

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Date of receipt of test sample : September 13, 2022
Date of Test : September 13, 2022 ~ September 30, 2022
Date of Report : September 30, 2022

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EMC TEST REPORT
EN IEC 61000-6-1: 2019
EN IEC 61000-6-3: 2021
EN IEC 61000-3-2: 2019+ A1: 2021
EN 61000-3-3: 2013+ A1: 2019+ A2: 2021

Report Reference No.	STE22092307E
Date Of Issue	September 30, 2022
Testing Laboratory Name	Shenzhen STE Testing Laboratory Co., Ltd
Testing Location/ Address	3/F, Building 9, Dehong Factory Building, No. 63 Yuchang Road, Nihu Community, Guanlan Street, Longhua District, Shenzhen, China
Applicant's Name	MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD
Address	1-5F, 7F, 9F, 10F of No. 8 Building, No. 115, Zhangcha Road 1, Chancheng District, Foshan City, Guangdong Province, P.R.China
Manufacturer's Name	MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD
Address	1-5F, 7F, 9F, 10F of No. 8 Building, No. 115, Zhangcha Road 1, Chancheng District, Foshan City, Guangdong Province, P.R.China
Test Specification:	
Standard	EN IEC 61000-6-1: 2019; EN IEC 61000-6-3: 2021; EN IEC 61000-3-2: 2019+ A1: 2021; EN 61000-3-3: 2013+ A1: 2019+ A2: 2021
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Test Item Description	LiFePO4 Battery Pack
Trade Mark.....	MUST
Test Model.....	LP19-48100
Serial Models	(Refer to page 7)
Ratings	51.2VDC, 100Ah
Result	Pass

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1. SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION TESTS (EN 61000-6-3)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance	EN IEC 61000-6-3: 2021	Class B	N/A
Radiated disturbance	EN IEC 61000-6-3: 2021	Class B	PASS
Harmonic current emissions	EN IEC 61000-3-2: 2019+ A1: 2021	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3: 2013+ A1: 2019+ A2: 2021	--	N/A
IMMUNITY TESTS (EN IEC 61000-6-1)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN IEC 61000-4-3: 2020	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	N/A
Surge (Input a.c. power ports)	EN 61000-4-5: 2014+ A1: 2017	B	N/A
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2018	A	N/A
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN IEC 61000-4-11: 2020	B	N/A
Voltage dips, 30% reduction		C	N/A
Voltage interruptions		C	N/A
N/A is an abbreviation for Not Applicable.			

1.2 Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution;
- quality of data display and transmission;
- quality of speech transmission.

1.2.1 Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derive from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2 Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derive from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3 Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be loss.

2. GENERAL INFORMATION

2.1 Description of Device (EUT)

EUT	: LiFePO4 Battery Pack
Trade mark	: MUST
Test Model	: LP19-48100
Serial Model No.	: LP19-48200, LP19-48300, LP19-48400, LP19-48500, LP19-48600, LP19-48700, LP19-48800, LP19-48900, LP19-481000, LP19-51100, LP19-51200, LP19-51300, LP19-51400, LP19-51500, LP19-51600, LP19-51700, LP19-51800, LP19-51900, LP19-511000
Model Difference	: All models are same except the appearance and rated capacity.
Power Supply	: 51.2VDC

Highest internal frequency (Fx)	Highest measured frequency
Fx ≤ 108 MHz	1 GHz
108 MHz < Fx ≤ 500 MHz	2 GHz
500 MHz < Fx ≤ 1 GHz	5 GHz
Fx > 1 GHz	5 × Fx up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.	

Where Fx is unknown, the radiated emission measurements shall be performed up to 6 GHz.

2.2 Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Normal Load

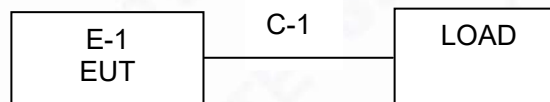
For Conducted Test	
Final Test Mode	Description
Mode 1	Normal Load

For Radiated Test	
Final Test Mode	Description
Mode 1	Normal Load

For EMS Test	
Final Test Mode	Description
Mode 1	Normal Load

2.3 Description of Test Setup

Mode 1:



2.4 Description Test Peripheral and EUT Peripheral

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	LiFePO4 Battery Pack	MUST	LP19-48100	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	80cm	DC wires

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc.

To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the STE quality system according to ISO/ IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.6 Measurement Uncertainty

Test Item	Frequency Range	Expanded uncertainty (U _{lab})	Expanded uncertainty (U _{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Mains Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A
EMF		± 21.59%	N/A

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1 Radiated Disturbance (Electric Field)

Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	3m Semi Anechoic Chamber	Maorui	/	/	2022-06-09	2023-06-08
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2022-06-09	2023-06-08
3	Log per Antenna	ROHDE & SCHWARZ	VULP9118	873	2022-06-09	2023-06-08
4	EMI Test Software	Farad	EMC	N/A	/	/
5	Positioning Controller	MF	MF-7082	/	2020-06-16	2023-06-16

3.2 Electrostatic Discharge

Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ESD Simulator	TESEQ	NSG 437	1615	2022-03-10	2023-03-10

3.3 RF Field Strength Susceptibility

Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	SIGNAL GENERATOR	R&S	SMB100A	105942	2022-03-10	2023-03-10
2	RF Power Amplifier	BONN Elektronik	BLWA0830-16 0/100/40D	128740	2022-03-10	2023-03-10
3	Log-periodic Antenna	SCHWARZBEC K	STLP9128D	043	2022-03-10	2023-03-10
4	Power Meter	R&S	102031	16829	2022-03-10	2023-03-10

3.4 Power Frequency Magnetic Field Susceptibility

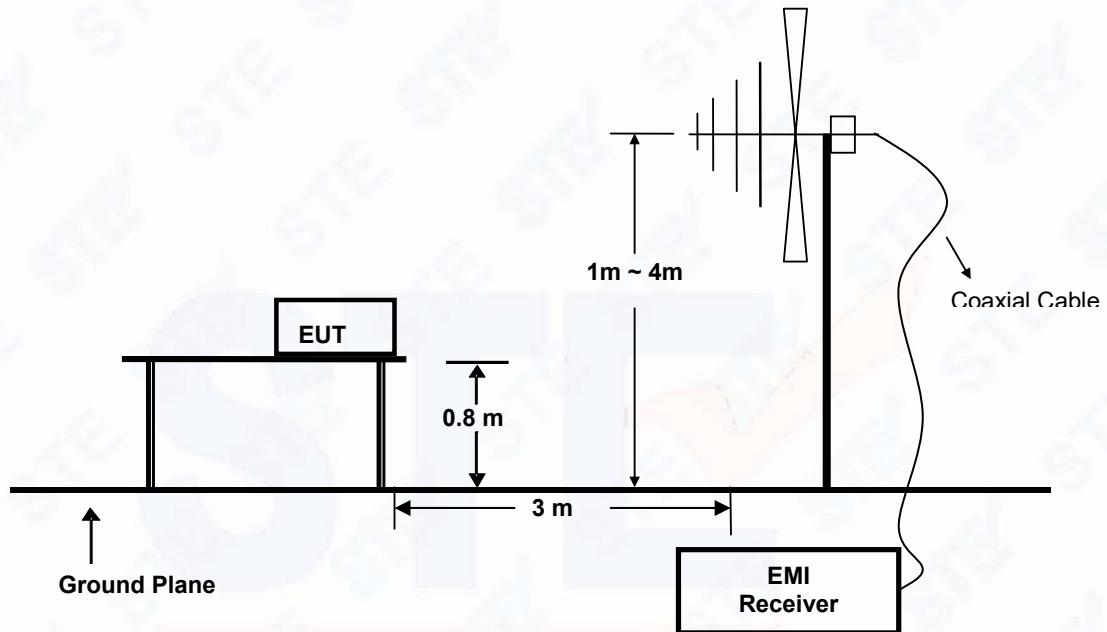
Item	Test equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Simulator	FRANKONIA	CIT-10	A126A1195	2022-06-09	2023-06-08
2	CDN	FRANKONIA	CDN-M2	5100100100	2022-06-09	2023-06-08
3	CDN	FRANKONIA	CDN-M3	0900-11	2022-06-09	2023-06-08
4	Attenuator	FRANKONIA	ATT6	0010222A	2022-06-09	2023-06-08
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2022-06-09	2023-06-08

4. EMISSION TESTS

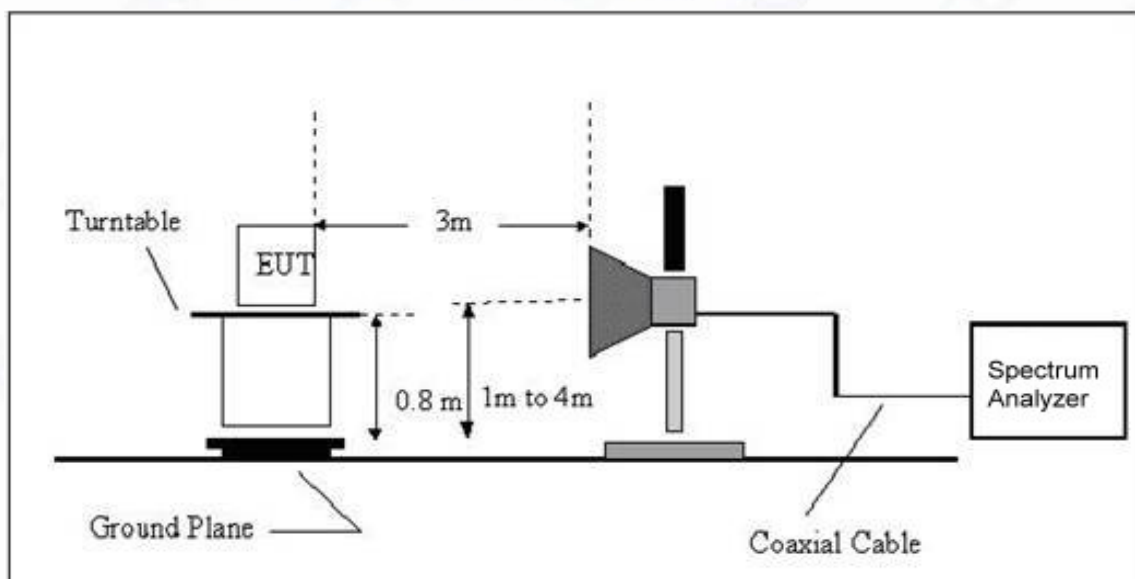
4.1 Radiated emission measurement

4.1.1 Block Diagram of Test Setup

1, Below 1 GHz



2, Above 1 GHz



4.1.2 Measuring Standard

EN IEC 61000-6-3: 2021

4.1.3 Radiated Emission Limits

All emanations from a class device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

1, LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	Class A		Class B	
	At 10m	At 3m	At 10m	At 3m
	dBuV/m	dBuV/m	dBuV/m	dBuV/m
30 – 230	40	50	30	40
230 – 1000	47	57	37	47

2, LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (at 3m) dBuV/m		Class B (at 3m) dBuV/m	
	Peak	Avg	Peak	Avg
1000-3000	76	56	70	50
3000-6000	80	60	74	54

- Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
 (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.1.4 EUT Configuration on Test

The EN 61000-6-3 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.1.5 Operating Condition of EUT

1. Turn on the power.
2. Let the EUT work in test mode and measure it.

4.1.6 Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna (calibrated by

Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

All the scanning waveform is in next page.

4.1.7 Test Results

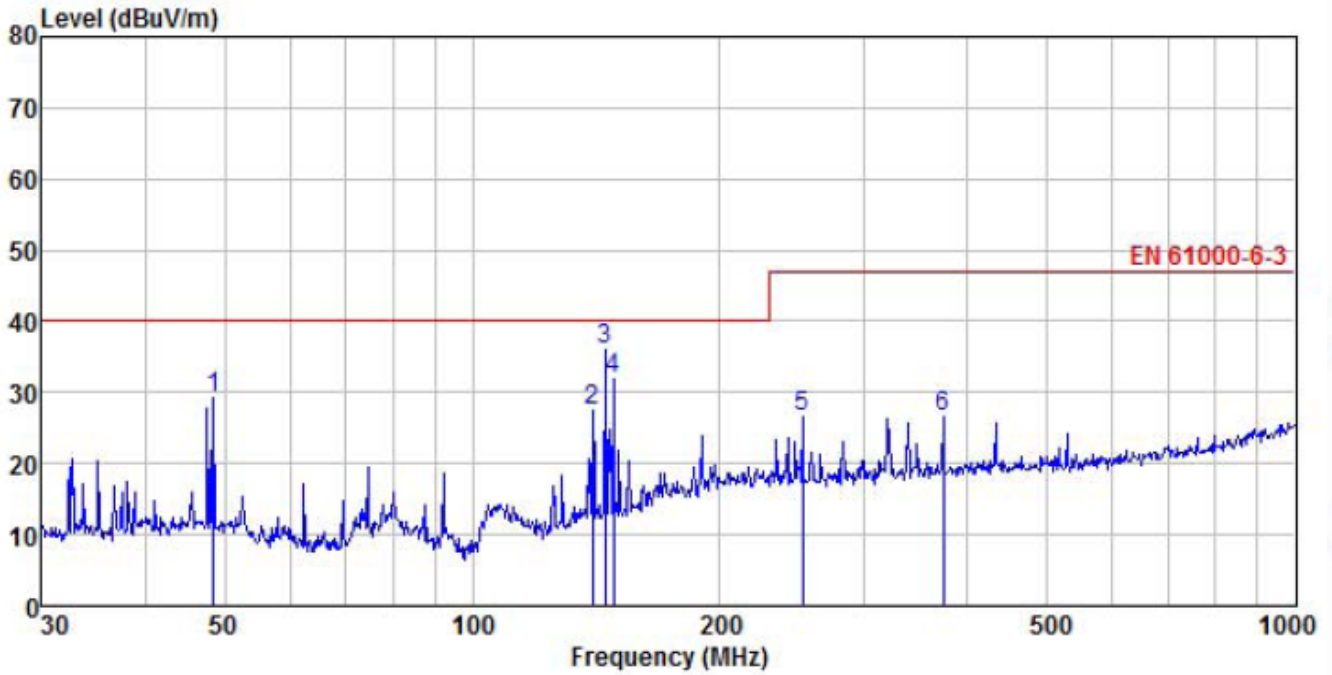
PASS.

The scanning waveforms are in the next page.



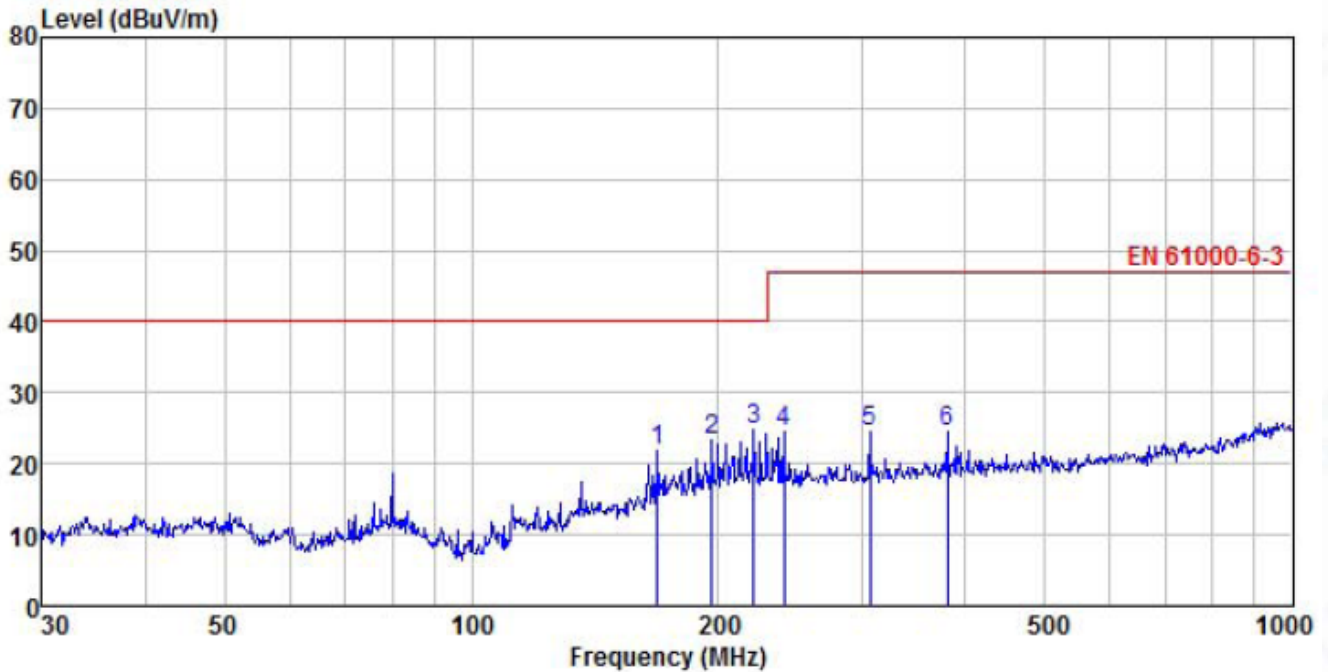
4.1.8 TEST RESULTS (Below 1000MHz)

Model No. (M/N):	LP19-48100	Test Mode:	Mode 1
Environmental Conditions:	23.6°C, 57.5% RH	Detector Function:	Quasi-peak
Distance:	3m	Polarization:	Vertical
Test Engineer:	Feng Liang	Test Voltage:	51.2V



	Freq	ReadAntenna	Cable	Aux	Preamp	Level	Limit	Over	Remark
	MHz	Level	Factor	Loss	Factor	Factor	Line	Limit	
		dBuV	dB/m	dB	dB	dB	dBuV/m	dBuV/m	dB
1	48.502	45.51	13.11	0.38	0.00	29.83	29.17	40.00	-10.83
2	139.851	42.35	13.80	0.60	0.00	29.27	27.48	40.00	-12.52
3	144.842	50.77	13.90	0.61	0.00	29.25	36.03	40.00	-3.97
4	148.441	46.24	14.18	0.61	0.00	29.23	31.80	40.00	-8.20
5	252.063	35.78	18.51	0.78	0.00	28.54	26.53	47.00	-20.47
6	373.311	35.19	18.94	0.96	0.00	28.66	26.43	47.00	-20.57

Model No. (M/N):	LP19-48100	Test Mode:	Mode 1
Environmental Conditions:	23.6°C, 57.5% RH	Detector Function:	Quasi-peak
Distance:	3m	Polarization:	Horizontal
Test Engineer:	Feng Liang	Test Voltage:	51.2V



	ReadAntenna	Cable	Aux Preamp	Level	Limit	Over			
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	168.414	34.08	16.20	0.65	0.00	29.06	21.87	40.00	-18.13
2	196.510	33.44	17.94	0.71	0.00	28.85	23.24	40.00	-16.76
3	220.617	34.26	18.39	0.74	0.00	28.70	24.69	40.00	-15.31
4	239.987	33.76	18.46	0.76	0.00	28.59	24.39	47.00	-22.61
5	305.680	33.42	18.71	0.87	0.00	28.46	24.54	47.00	-22.46
6	379.914	33.24	18.98	0.97	0.00	28.69	24.50	47.00	-22.50

4.1.9 TEST RESULTS (1000~6000MHz)

Model No. (M/N):	LP19-48100	Test Mode:	Mode 1
Environmental Conditions:	23.6°C, 57.5% RH	Detector Function:	N/A
Distance:	3m	Polarization:	N/A
Test Engineer:	N/A	Test Voltage:	N/A

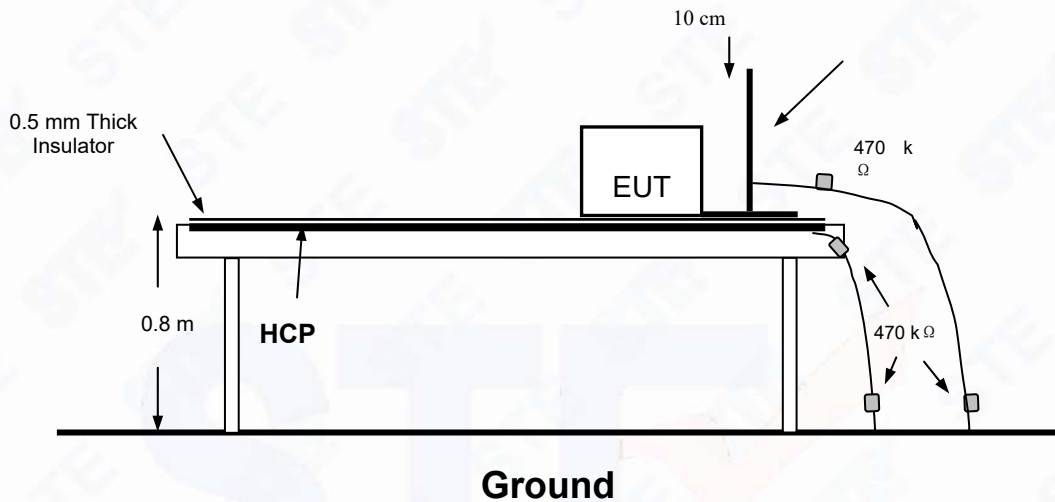
Remark:

The frequency of the product is lower than 108MHz, it does not apply

5. IMMUNITY TESTS

5.1 ELECTROSTATIC DISCHARGE IMMUNITY TEST

5.1.1 Block Diagram of Test Setup



5.1.2 Test Standard

EN IEC 61000-6-1:2019 (EN 61000-4-2: 2009,
Severity Level: 3 / Air Discharge: ± 8 KV, Level: 2 / Contact Discharge: ± 4 KV)

5.1.3 Severity Levels and Performance Criterion

1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

2. Performance Criterion: B

5.1.4 EUT Configuration on Test

The configuration of EUT is listed in Section 3.2.

5.1.5 Operating Condition of EUT

Same as Radiated emission measurement which is listed in Section 4.1.5.
Except the test set up replaced by Section 5.1.1.

5.1.6 Test Procedure

(1) Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

(2) Contact Discharge

All the procedure shall be same as Section 5.1.6(1). Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

(3) Indirect Discharge for Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

(4) Indirect Discharge for Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

5.1.7 Test Results

PASS.

Please refer to the following pages

ESD Test Results

Standard	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
Applicant	MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD		
EUT	LiFePO4 Battery Pack	Temperature	24.1°C
M/N	LP19-48100	Humidity	55.9%
Criterion	B	Pressure	1021mbar
Test Mode	MODE 1	Test Engineer	Feng Liang

Air Discharge

Test Points	Test Levels			Results		
	± 4kV	± 8kV	± 10kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

Discharge To Horizontal Coupling Plane

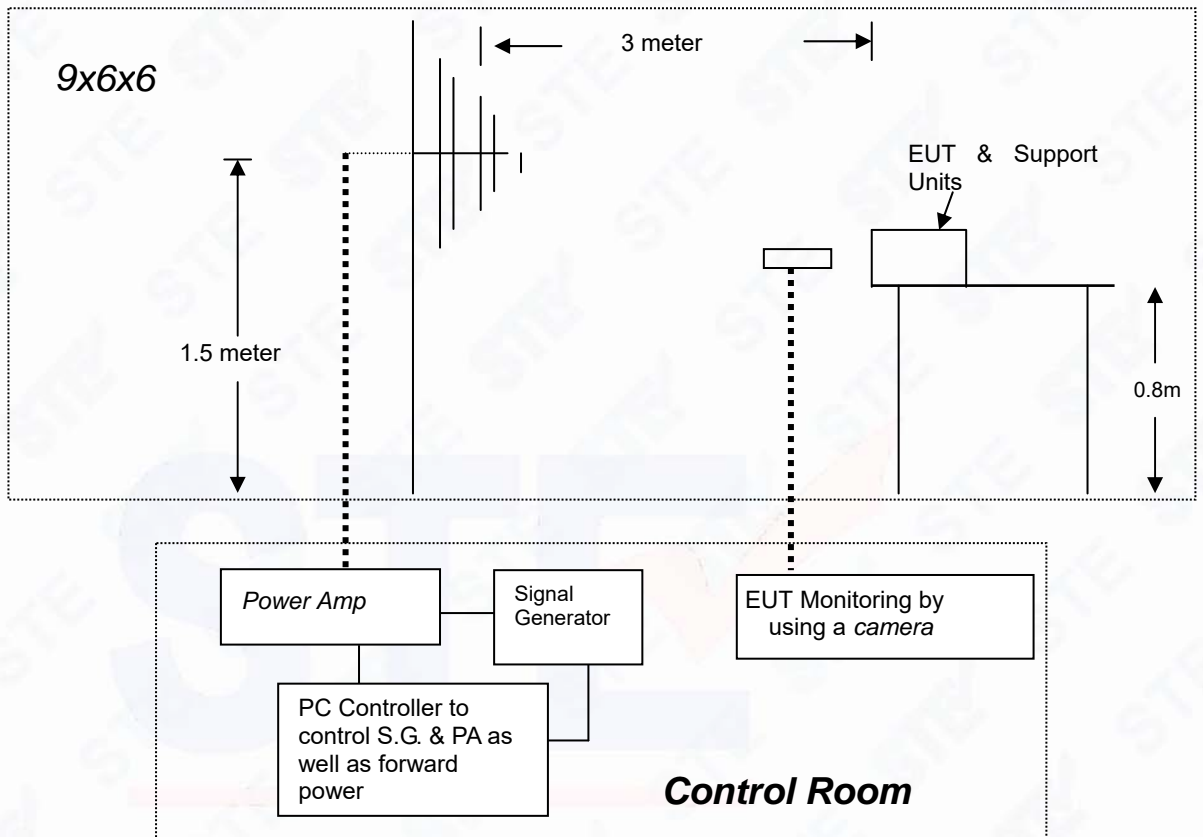
Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

5.2 RF FIELD STRENGTH SUSCEPTIBILITY TEST

5.2.1 Block Diagram of Test Setup



5.2.2 Test Standard

EN IEC 61000-6-1:2019
(EN IEC 61000-4-3, Severity Level: 2, 3V/ m)

5.2.3 Severity Levels and Performance Criterion

1. Severity Levels

Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X.	Special

2. Performance Criterion: A

5.2.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.

5.2.5 Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 4.1.5, except the test setup replaced as Section 5.2.1.

5.2.6 Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD Recording is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80-6000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	3 Sec.

5.2.7 Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

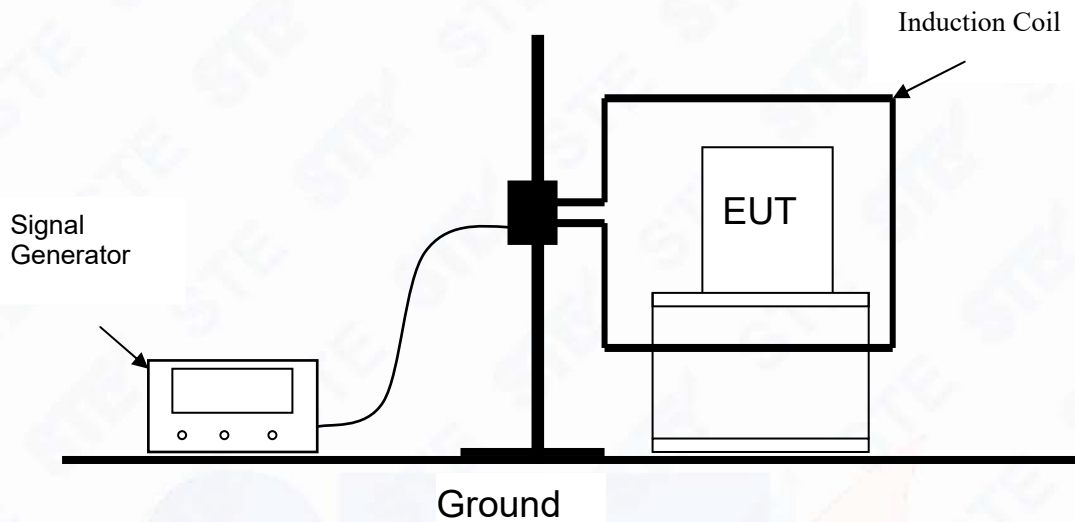
Standard	<input type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> EN 61000-4-3		
Applicant	MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD		
EUT	LiFePO4 Battery Pack	Temperature	23.7°C
M/N	LP19-48100	Humidity	59.8%
Field Strength	3 V/m	Criterion	A
Test Mode	Mode 1	Test Engineer	Feng Liang
Frequency Range	80 MHz to 6000 MHz		
Modulation	<input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1KHz 80%		
Steps	1%		

	Horizontal	Vertical
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Note:

5.3 MAGNETIC FIELD SUSCEPTIBILITY TEST

5.3.1 Block Diagram of Test Setup



5.3.2 Test Standard

EN IEC 61000-6-1:2019

(EN 61000-4-8: 2010, Severity Level: Level 2, 3A/ m)

5.3.3 Severity Levels and Performance Criterion

1. Severity Levels

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

2. Performance Criterion: A

5.3.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.4.

5.3.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field.

Also can reach the same aim by change the position of the EUT.

5.3.6 Test Results

PASS.

Please refer to the following page.



Magnetic Field Immunity Test Result

Standard	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		
Applicant	MUST ENERGY (GUANGDONG) TECHNOLOGY CO., LTD		
EUT	LiFePO4 Battery Pack	Temperature	23.9°C
M/N	LP19-48100	Humidity	56.1%
Test Mode	Mode 1	Criterion	A
Test Engineer	Feng Liang		

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
3	5 mins	X	A	PASS
3	5 mins	Y	A	PASS
3	5 mins	Z	A	PASS

Note:

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1



Fig. 2



Fig. 3

----- THE END OF TEST REPORT -----